Amendment to the Claims:

1. (Currently amended) A diagnostic imaging system including:

a diagnostic imaging scanner that acquires imaging data of a subject in an examination region;

a reconstruction processor that reconstructs the acquired imaging data into an image representation;

a pair of electrodes adapted to externally contact a thoracic region of the subject;

an electrical meter that measures a time-varying electrical parameter across the electrode pair by applying a voltage or current pulse train having a frequency substantially higher than the heart rate across the pair of electrodes; and

a monitor that extracts a time-varying respiration characteristic from the measured time-varying electrical parameter.

2. (Previously presented) The imaging system as set forth in claim 1, wherein the time-varying electrical parameter is selected from a group consisting of:

a time-varying complex impedance,

a time-varying resistance,

a time-varying capacitance,

time-varying inductance,

a time varying current, and

a time varying voltage.

3. (Previously presented) The imaging system as set forth in claim 1, wherein the diagnostic imaging scanner is a computed tomography scanner.

4. (Previously presented) The imaging system as set forth in claim 1, wherein the electrical meter includes:

a voltage pulse generator that applies a voltage pulse train to the electrode pair; and

an ammeter that measures an electrical current flowing between the electrode pair responsive to the applied voltage pulse train.

5. (Previously presented) The imaging system as set forth in claim **1**, further including:

an imaging controller that receives the respiration characteristic and controls the diagnostic imaging scanner based thereon.

6. (Previously presented) The imaging system as set forth in claim **1**, wherein the monitor includes:

a differentiator that computes a time derivative of the time-varying electrical parameter.

7. (Previously presented) The imaging system as set forth in claim **6**, wherein the time-varying electrical parameter includes a time-varying resistance, the differentiator computes a first derivative, and the monitor further includes:

a respiration state processor that computes the respiration parameter as one of:

inhaling corresponding to a positive time derivative of the time varying resistance,

exhaling corresponding to a negative time derivative of the time varying resistance, and

a breath-hold state corresponding to a substantially zero time derivative of the time-varying resistance.

8. (Previously presented) The imaging system as set forth in claim **1**, wherein the monitor includes:

a respiratory cycle phase processor that estimates a respiratory cycle phase based on the time varying electrical parameter.

9. (Previously presented) The imaging system as set forth in claim **1**, wherein the monitor includes:

a calibration that correlates electrical parameter values with a tidal volume of air in lungs of the subject; and

a transform processor that references the calibration to transform the time varying electrical parameter into a time-varying tidal volume of air in the lungs.

10. (Previously presented)The imaging system as set forth in claim **1**, further including:

an image data binning means for sorting imaging data into respiratory cycle phase bins based on the time-varying respiration characteristic, the reconstruction processor reconstructing data in a selected one or more of the respiratory cycle phase bins.

11. (Previously presented)The imaging system as set forth in claim **1**, further including:

an electrocardiograph that measures electrocardiographic data of the subject using at least the pair of electrodes.

12. (Canceled)

13. (Currently amended) A medical diagnostic imaging method including:

acquiring imaging data of a medical imaging patient;

reconstructing at least a part of the acquired imaging data into an image representation;

externally contacting a thoracic region of the patient with the pair of external electrodes;

measuring a time-varying electrical parameter across ~~an~~ the external electrodes pair during the acquiring of imaging data, the measuring including applying one of a voltage and a current to the external electrodes pair, measuring the

other of voltage and current responsive to the applying, and computing the time-varying electrical parameter based on the applied and measured quantities; and

computing a time-varying respiration characteristic based on the measured time-varying electrical parameter.

14. (Canceled)

15. (Currently amended) The method as set forth in ~~claim 14~~ claim **13**, wherein the contacting of the thoracic region with the electrodes pair includes:

relatively arranging the electrodes pair with a substantial portion of the thoracic region disposed therebetween.

16. (Previously presented)The method as set forth in claim **13**, wherein the acquiring of imaging data includes:

passing x-rays through an imaging region;

measuring x-ray intensities after passing through the imaging region; and

computing x-ray absorption data from the measured x-ray intensities.

17. (Canceled)

18. (Currently amended) ~~The~~ A medical diagnostic imaging method ~~as set forth in claim 17, wherein the applying step includes~~ comprising:

acquiring imaging data of a medical imaging patient;

reconstructing at least a part of the acquired imaging data into an image representation;

measuring a time-varying electrical parameter across an electrodes pair during the acquiring of imaging data, the measuring including applying a pulse train of voltage or current pulses to the electrodes pair, measuring the other of voltage and current responsive to the applying, and computing the time-varying electrical parameter based on the applied and measured quantities; and

computing a time-varying respiration characteristic based on the measured time-varying electrical parameter.

19. (Currently amended) The method as set forth in claim **13**, further including:

measuring cardiac cycling data using the external pair of electrodes.

20. (Previously presented)The method as set forth in claim **19**, wherein the measuring of cardiac cycling data using the pair of electrodes is performed substantially simultaneously with the measuring of a time-varying electrical parameter across the electrodes pair.

21. (Previously presented)The method as set forth in claim **13**, wherein the measuring of a time-varying electrical parameter across the electrodes pair includes:

measuring a time-varying resistance across the electrodes pair.

22. (Previously presented)The method as set forth in claim **13**, wherein the computing of a time-varying respiration characteristic from the time-varying electrical parameter includes:

determining a respiration state based on a temporal slope of the time-varying electrical parameter.

23. (Previously presented)The method as set forth in claim **13**, wherein the computing of a time-varying respiration characteristic from the time-varying electrical parameter includes:

selecting a respiration state based on a temporal slope of the time-varying electrical parameter, the respiration state being selected as one of:

inhaling corresponding to a positive temporal slope,

exhaling corresponding to a negative temporal slope, and

a breath-hold state corresponding to a generally horizontal slope.

24. (Previously presented)The method as set forth in claim **13**, wherein the computing of a time-varying respiration characteristic from the time-varying electrical parameter includes:

computing a respiration rate proportional to a temporal frequency of the time varying electrical parameter.

25. (Previously presented)The method as set forth in claim **13**, wherein the computing of a time-varying respiration characteristic from the time-varying electrical parameter includes:

computing a time-varying tidal volume function of air in lungs of the patient based on the time varying electrical parameter.

26. (Previously presented)The method as set forth in claim **13**, wherein the computing of a time-varying respiration characteristic from the time-varying electrical parameter includes:

computing a time varying respiratory cycle phase function based on the time varying electrical parameter.

27. (Previously presented)The method as set forth in claim **13**, further including:

gating the acquiring of imaging data based on the extracted time-varying respiration characteristic.

28. (New) The method as set forth in claim **18**, wherein the applying a pulse train of voltage or current pulses to the electrodes pair comprises applying a pulse train of voltage or current pulses having a pulse frequency substantially higher than the heart rate.

29. (New) The method as set forth in claim **13**, wherein the applying one of a voltage and a current to the external electrodes pair comprises:

applying a pulse train of voltage or current pulses having a pulse frequency substantially higher than the heart rate to the electrodes pair.

30. (New) The imaging system as set forth in claim **1**, wherein the electrical meter applies the voltage or current pulse train having a frequency in the tens of kilohertz range.